1020-42 **Dobutamine Nuclear Myocardial Perfusion Imaging Compared to Dobutamine Stress Echocardiography as a Prognostic Test for Coronary Artery Disease**

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**Purpose:** To compare the prognostic value of dobutamine stress echocardiography (DSE) and dobutamine myocardial perfusion imaging (D-MPI).
**Methods:** Retrospective analysis of 281 patients (pts) undergoing DSE and 140 pts undergoing D-MPI. Mean follow-up: D-MPI was 28.5+-10 mo (100% f/u); DSE 21.3+- 9.9 mo (92% f/u). +DSE was defined as reduction in wall motion score in ≥2 segments rest to stress, +D-MPI as sum stress score ≥7. Soft events were cardiac hospitalization, heart failure, revascularization. Hard events were MI, unstable angina or CV death.
**Results:** D-MPI pts had a higher incidence of MI (45 vs 33.2%), diabetes (41.4 vs 29.3%), lipids (52.8 vs 42.1%), tobacco (74.3 vs 53.5%) and Ca++ channel blockers (33.6 vs 18.2%) (p<0.04) but lower betablockers (25 vs 48.3%). At one year, there were 12 hard events (4.6%) and 38 combined events (14.7%) in the DSE group compared to 7 (5%) and 15 (10.7%) events in the D-MPI group. By multivariate analysis, EF<40% remained predictive of hard and all events for DSE (p<0.002) and D-MPI (p<0.03). +D-MPI remained predictive for hard and all events (p=0.001) while +DSE was predictive for all events (p<0.06). By log rank testing, survival at 36 mo was not different between groups for hard events (p=0.961) but event-free survival trended lower in the DSE group for combined events (p=0.095).
**Conclusions:** Sicker pts were referred for D-MPI but event rates were similar for both tests. +D-MPI appears to be superior to +DSE for prediciting major CV events but equivalent for all cardiac events.

| Univar Predict | DSE Hard | DSE All | D-MPI Hard | D-MPI All |
|---|---|---|---|---|
| LVEF<40 | <0.001 | p=0.001 | p=0.015 | 0.007 |
| +DSE | ns | p=0.026 | -- | -- |
| +D-MPI | -- | -- | p<0.001 | p<0.001 |
| Sex | ns | ns | p=0.048 | 0.045 |
| Str SBP | ns | ns | p=0.013 | 0.012 |
| Str DBP | ns | ns | p=0.023 | 0.045 |

1020-43 **Accuracy of Automated Quantitation of Left and Right Ventricular Function and Volumes by Magnetic Resonance Imaging**

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Background. Equilibrium blood-pool gated single-photon emission computed tomography (GBP-SPECT) assessment of left (LV) and right (RV) ventricular ejection fractions (EF), end-diastolic (EDV) and end-systolic (ESV) volumes using automated software Quantitative Blood-pool SPECT (QBS) has become routine. We aim to validate the accuracy of QBS, using cardiac magnetic resonance (MR) as the gold standard.
Methods. 31 clinical subjects (23 male, 7 female; mean age 49 ± 13 yr, range 21-70 yr) undergoing GBP-SPECT (18 had heart failure; 6, ventricular dysrhythmia; 2, pulmonary hypertension; 5, miscellaneous) were enrolled. Cardiac MR (1.5T MR scanner) was performed on each within 2 weeks. Ventricular function and volumes were measured using QBS for GBP-SPECT, and manual endocardial contouring for cine MR images.
Results. There was good correlation between LVEF (r = 0.86, p<0.001), LVEDV (r = 0.93, p<0.001) and LVESV (r = 0.95, p<0.001) assessed by QBS and MR. The QBS and MR means were LVEF: 43.4 ± 20.0% vs 46.8 ± 18.2%, LVEDV: 103.6 ± 53.5 ml vs 137.7 ± 59.0 ml and LVESV: 66.3 ± 52.4 ml vs 80.8 ± 59.6 ml, respectively; and their respective mean differences (QBS minus MR) were -3.4% (95% CI -7.2% to 0.3%), -34.1 ml (95% CI -42.0 ml to -26.2 ml) and -14.5 ml (95% CI -21.6 ml to -7.3 ml), indicating that QBS underestimated LVEDV and LVESV. There was fair correlation between RVEF (r = 0.60, p<0.001), RVEDV (r = 0.71, p<0.001) and RVESV (r = 0.75, p<0.001) assessed by QBS and MR. The QBS and MR means were RVEF: 45.9 ± 12.4% vs 49.0 ± 13.4%, RVEDV 104.4 ± 31.1 ml vs 122.3 ± 31.7 ml and RVESV 57.5 ± 22.3 ml vs 61.8 ± 18.2 ml, respectively; and their respective mean differences (QBS minus MR) were -3.1% (95% CI -7.3% to 1.2%), -18.0 ml (95% CI -26.8 ml to -9.1 ml) and -4.3 ml (95% CI -9.8 ml to 1.1 ml), indicating that QBS underestimated RVEDV. Bland-Altman plots showed underestimation of LVEDV, LVESV and RVEDV by QBS throughout the whole range of respective ventricular volumes.
Conclusion. QBS yielded LVEF and RVEF values comparable to MR, with good correlation in the former. QBS-derived volumes showed fair to good correlation with MR, but there was less agreement as QBS appeared to underestimate LVEDV, LVESV and RVEDV across the range of ventricular volumes.

1020-44 **Incremental Value of Cardiac Imaging in Patients Presenting to the Emergency Department With Chest Pain and Without ST-Segment Elevation: A Multicenter Study**

Sanjiv Kaul, Roxy Senior, Christian Firschke, Jonathan R. Lindner, Flordeliza S. Villanueva, Soroosh Firoozan, Michael C. Kontos, Allen J. Taylor, Denny D. Watson, Xin-Qun Wang, University of Virginia, Charlottesville, VA

**Background:** In this prospective, multi-center study, we tested the hypothesis that imaging of regional myocardial perfusion and function will add incremental value for both diagnosis as well as short-term prognosis to routine demographic, clinical, and electrocardiographic (EKG) findings in patients presenting to the emergency department (ED) with chest pain and without ST-segment elevation. **Methods:** Resting gated single-photon emission computed tomography (SPECT) was performed in 163 patients with suspected acute coronary syndrome wihtout ST-segment elevation on the EKG. Blinded gated-SPECT readings included assessment of both regional myocardial perfusion and function using a 14 segment model of the left ventricular myocardium. Adverse events in the first 48 hours after ED presentation included : acute myocardial infarction (AMI), emergent revascularization, and cardiac-related death. **Results:** Of the 163 patients recruited for the study from 7 centers (3 in Europe and 4 in the US), 31(19%) had a cardiac event within 48 hours of ED presentation: 14 had AMI, 16 underwent an urgent revascularization procedure, and 1 died. The sensitivity and specificity of gated-SPECT for events was 71% each. Only 1 AMI was missed by SPECT. On multivariate logistic regression analyhsis, the number of abnormal segments on gated-SPECT was a significant predictor (p<0.01) of cardiac events occuring within 48 hours. Gated-SPECT provided 24% additional information (p<0.01) for predicting cardiac events compared to routine demographic, clinical, and EKG variables. **Conclusion:** Cardiac imaging at the time of ED presentation offers substantially greater diagnostic and prognostic information than routine assessment using demographic, clinical, and EKG information, for early cardiac events in patients presenting with chest pain and no ST-segment elevation.
**Key words:** Acute ischemic syndrome, cardiac events, regional perfusion, regional function

POSTER SESSION

## 1025A-MP Moderated Poster Session...Contrast Echocardiography Prognosis for Improvement in Ventricular Performance Following Infarction of Intervention I

Sunday, March 30, 2003, Noon-1:00 p.m.
McCormick Place, Hall A

Noon

1025A-MP-203 **Use of Myocardial Contrast Echocardiography in Identifying Patients With Failed Reperfusion After Thrombolysis in Acute Myocardial Infarction: Comparison With TIMI Myocardial Perfusion Grade and Clinical Markers of Reperfusion**

Luciano Agati, Stefania Funaro, Gabriele Veneroso, Mariapina Madonna, Flavia Celani, Francesca De Maio, Carlo Iacoboni, Rachele Adorisio, Francesco Fedele, La Sapienza University of Rome, Rome, Italy

*Background:* The diagnosis of failed reperfusion after thrombolysis still remains a daily unsolved issue. At present, the decision of different level of aggressiveness in acute myocardial infarction (AMI) is only based on clinical, enzymatic and ecg data. The role of intravenous myocardial contrast echocardiography (MCE) is still under debate.
*Method:* At this aim, 32 consecutive patients with AMI, treated with iv t-PA within 6 h from symptom onset, underwent on day one after reperfusion therapy, coronary angiography and MCE, using real-time imaging (Philips 5500 or CnTI-Esaote) during continuous infusion of SonoVue® (Bracco). A prototype (Bracco Imaging) rotating infusion pump at 120-180 ml/h infusion rate was used. According to TIMI myocardial perfusion, patients were divided into two groups: Group A (n=16) TIMI grade 0-1 and Group B (n= 14) TIMI grade 2 or 3. The endocardial length of residual contrast defect (apical 4- 5- and 2- chamber views) after thrombolysis, contrast score index and clinical markers of reperfusion were calculated. Successful reperfusion after iv t-PA was defined as an early (<12h) peaking of creatine kinase and a rapid decrease of at least 50% of ST-segment elevation (within 2 hours after thrombolysis) and as a residual MCE perfusion defect < 10% . Left ventricular ejection fraction (EF) and wall motion score index (WMSI) on day 1 were also calculated.
*Results:* Patients in group A and B had similar EF and WMSI on day 1 (45±8 vs 45±8%, and 1.8±.4 vs 1.6±.3, respectively, ns ). On the contrary, the contrast score index and the extent of contrast defect were significantly higher in group A as compared to group B (3.7±.3 vs 3.3±.2, p<0.03, and 30±10 vs 15±21%, p<0.001, respectively). TIMI grade was correctly predicted by clinical criteria (ecg+enzyme) in 59% of patients, and by MCE criteria in 81% of patients. Sensitivity and specificity in TIMI grade prediction improve when MCE and ECG criteria were considered together (100% and 80%, respectively).
*Conclusions:* MCE can accurately determine reperfusion success at tissue level and may be an important adjunctive tool for a better indication to a more aggressive treatment in AMI.

12:12 p.m.

1025A-MP-204 **Simultaneous Inhibition of Integrin Alpha V Beta 3 Potentiates the Effect of Platelet Glycoprotein IIb/IIIa Antagonism on Infarct Size Reduction in Acute Coronary Thrombosis**

Tadamichi Sakuma, Ibrahim Sari, Craig N. Goodman, Jonathan R. Lindner, Alexander L. Klibanov, Howard Leong-Poi, Sanjiv Kaul, University of Virginia, Charlottesville, VA

**Background** Platelet glycoprotein IIb/IIIa (IIb/IIIa) antagonism has been shown to reduce infarct size (IS) in acute coronary thrombosis by its effect on platelets. We hypothesized that simultaneous inhibition of integrin alpha V beta 3 ($a_v\beta_3$) will potentiate the effect of IIb/IIIa antagonism on IS reduction in acute coronary thrombosis. **Methods** An occlusive